

ACKNOWLEDGEMENT

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AN UNDESCRIBED SPECIES OF *MUSSAENDA* L. (RUBIACEAE) FROM EASTERN HIMALAYA¹

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(with ten text-figures)

Mussaenda andersonii S.K. Basu et T.K. Paul typified by Anderson 163 from Sikkim is established as a new species. The new species is described and illustrated.

While studying the material of *Mussaenda* L. (Rubiaceae) in CAL we came across some interesting specimens collected by Simons, Anderson, King and others during 1862-1876. These specimens are from Darjeeling, Sikkim Himalaya and had been given a manuscript name by King, but this name does not seem to have been published. Again King remarked on two of these specimens "Same as 6250G Wall. Cat." Further he also sought the opinion of C.B. Clarke on the identity of these specimens and quoted on the specimens "CBC says = *M. wallichii* G. Don". But *M. wallichii* G. Don as cited by J.D. Hooker (1880) in *Fl. Brit. India* is a plant with persistent calyx. G. Watt ignored Clarke's identification and wrote on one of the fruiting specimens (C.B. Clarke? 255), "Fl. Br. Ind. remarks regarding *wallichii* calyx teeth persistent". But he was silent about the identity of that fruiting specimen. jaya-

weera (1963) revised the genus *Mussaenda* L. of India and Sri Lanka but may not have examined these specimens preserved in CAL.

Our studies reveal that these specimens neither match with *M. wallichii* G. Don nor Wall. Cat. 6250 G, i.e., *M. glabrata* (Hook.f.) Hutch. ex Gamble, nor do they match with any other known species of the genus *Mussaenda* L. and in fact represent a hitherto unrecognised species. They are therefore described here as a new taxon.

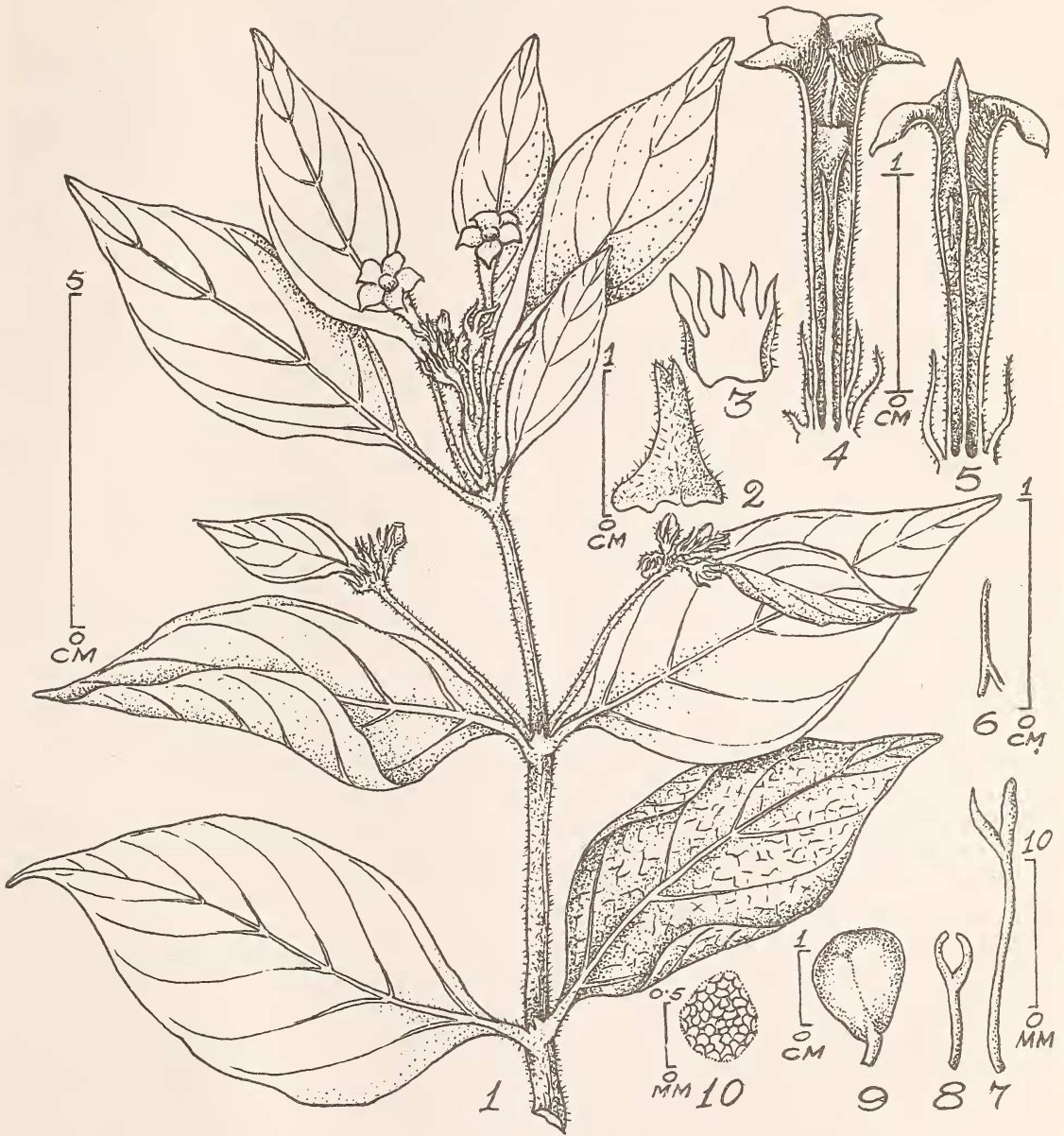
Mussaenda andersonii sp. nov.

M. frondosae L. affinis, sed differt foliis sparsim pilosis, stipulis intus glabris, calycis lobis brevioribus (c. 3 mm longis), puberulisque, sepalis petaloideis glabrescentibus, corollaeque tubis brevioribus (1.9 cm longis).

Scandent shrub; young stem hirsute, older stems glabrate, blackish brown. Leaves opposite, elliptic, ovate to oblong, 4.6-11.2 x 2.1-6 cm, apex shortly acuminate or acute, base cuneate or rounded, upper surface sparsely hairy, sometimes hairs only along the veins and veinlets; primary lateral veins 6-8 pairs; petiole 0.5-1.0 cm

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Figs. 1-10. *Mussaenda andersonii* sp. nov.

1. Flowering twig; 2. Stipule; 3. Calyx lobes; 4. Longitudinal Section of short styled flower with tufted hairs at mouth and stamens in throat of the corolla tube; 5. Longitudinal Section of long styled flower with tufted hairs at mouth and stamens about half way on the corolla tube; 6. Dorsifixed anther; 7. Style of long styled flower; 8. Style of short styled flower; 9. Fruit; 10. Seed.

TABLE 1
DISTINGUISHING CHARACTERS BETWEEN *M. frondosa* AND *M. andersonii*

<i>M. frondosa</i>	<i>M. andersonii</i> sp. nov.
Leaf : Primary veins 6-10 pairs, densely hairy	Primary veins 6-8 pairs sparsely hairy.
Stipule : Inner surface hairy	Inner surface glabrous
Calyx : Calyx lobes longer (6.5-15 mm long), hairy petaloid sepals hairy	Calyx lobes shorter (c. 3 mm long), minutely pubescent, petaloid sepals glabrescent.
Corolla : Corolla tube longer (2-2.7 cm) long	Corolla tube shorter (1.9 cm) long.

long, hairy; stipules 4 mm long, broadly triangular, bifurcate 1/4 - 3/4 their length, lobes straight, outer surface hairy, glabrous inside, deciduous. Inflorescence terminal or from leaf axils, dichotomously branched, pubescent, few flowered cymes; bracts and bracteoles trifid. Flowers heterostylous on stout pedicel, pedicel 2-3 mm long, pubescent. Calyx lobes 5, linear, c. 3 mm long, deciduous, outer side pubescent, inside glabrous or with few hairs; petaloid sepal creamy white, ovate or oblong-ovate, 2.5-5.5 x 1.3-3.2 cm, apex acute to subacute, base long or short attenuate or cuneate at base, glabrescent, 6-7 nerved, lower surface with few hairs on the nerves, petiole 6-10 mm long. Corolla tube 1.9-2.0 cm long, hairy on the outer surface, inner surface densely hairy upto the base of the anthers. Corolla lobes 4 x 2 mm, ovate, apiculate, outer surface hairy, papillate within. Anthers 4 mm and filaments 1 mm long in short styled form, in long styled form anthers 4.5-5 mm and filament 1.5 mm long, anthers linear, dorsifixed, bilobed at the base. Ovary 1-1.5 mm long, hairy, 2-locular; style and stigma lobes 6 mm and 3 mm long respectively in short styled form, 1.4 cm and 4 mm long in long styled form. Berry globose, c. 1 cm long and broad, sparsely hirsute to glabrous; seeds numerous, minute, c. 0.5 mm long and broad, reticulate, not spiny, brownish in colour.

Holotype: India, Sikkim, Kolwong, 9-5-1862, Anderson 163 (CAL).

Fls. & Frts. : May-Sept.

Distribution: Eastern Himalaya (Sikkim, Darjeeling).

Specimens examined: INDIA: Sikkim : Dungbo forest, 900-1200 m, 29-11-1875, King s.n. (CAL); Tangbob, 600 m, 12-5-1874, s.l. 574 (CAL); Sine, loc. exact. Simons s.n. (CAL). West Bengal, Darjeeling dist., above Mongpoo, 1680 m, Sept. 1874, Clarke (?) 255 (CAL).

Mussaenda andersonii S.K. Basu et T.K. Paul is allied to *M. frondosa* L. but differs as shown in Table 1. *M. andersonii* also differs from *M. laxa* (Hook. f.) Hutch. ex Gamble in having compact inflorescence.

The new taxon is named after T. Anderson, the first collector of this new species.

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REVIEWS

SNAKEMAN by Zai Whitaker. The India Magazine Books, 1989. pp. 185, Rs. 195.

I have, pasted on the glass door of my book cabinet, a printed maxim that "Nothing is impossible to the person who won't listen to reason".

Not many people make it safely on the slippery road to success by balking convention. I know of only two in the field of natural history who did so and still made it to the top of the ladder, Salim Ali the noted Ornithologist, and Romulus Whitaker, the Snakeman.

This biography records Whitaker's rough road to success. I had met him many years ago for a hike through the forests of Kalakad Sanctuary in Tamil Nadu, a Sanctuary much loved by both of us. As Rom, after a long day's trek, settled down in the Dak Bungalow by changing into a 'lungi' and tying a string from window to window to hang up his clothes and his towel, I knew that he was fully assimilated and was, except for his unfortunate colour, as good an Indian as any native of the country.

Now a naturalised Indian, Rom has been the single major factor in the conservation of the reptiles of the subcontinent. The snakes particularly have been to a certain extent freed from the web of fear and superstition and from being exported abroad as dressed skins.

Rom's Madras Snake Park was largely responsible for this conservation movement. It is unfortunate that he was winkled out of the management of the Park. A self taught Herpetologist, he has very few peers in the field of ecology of the reptiles of India. This biography leads us through the early years of his snake collecting days in the USA to his return to India where he had studied as a boy, and his total involvement with the reptiles of the land and the people, the tribal Irulas, whose livelihood are the snakes. It is the fascinating story of goals achieved through sheer determination in the face of formidable obstacles.

The book has been written by Zai Whitaker with warmth and wry humour, and without any rancour for the many vicissitudes created for Rom by obtuse officials and others. The snakes, particularly the King Cobras, come alive in the descriptions of Rom's search in the subcontinent and the Andamans for these beautiful and vibrant animals. The book is pleasant reading throughout.

A book recommended not only for naturalists but also for those interested in the unusual in the human psyche.

J.C. DANIEL

MANAGEMENT OF NATIONAL PARKS AND SANCTUARIES IN INDIA by A. Kothari, P. Pande, S. Singh and D. Variava. Indian Institute of Public Administration, New Delhi, 1989. 289 pp. Rs 250/ US \$ 40 (hardcover), Rs 150/ US \$ 30 (soft cover)

The protection of nature is a very old tradition in India, deep-rooted in its cultural history. Sacred groves were established by hunter-gatherer societies several thousand years ago and they remain widespread today. As early as the 4th century BC, the establishment of forest reserves and special sanctuaries for wild animals was advocated in the Arthashastra, a manual of state-craft. Subsequently, many rulers set up and maintained reserves for hunting purposes. A number of these have remained largely intact and provided the basis of the present network of national parks and sanctuaries in India, which dates back to the early part of this century. Several sanctuaries in Assam, for example, were established in 1915 and subsequent years, while the first national park, Hailey (later renamed Corbett), was declared in 1936. The number of protected areas has risen rapidly in recent decades, from a modest 65 national parks and sanctuaries in 1960 to 472 by the end of 1989, extending over a total area of about 131,800 sq.km, or 4% of the country. In view of the numerous other

pressures on land, especially forested land, this achievement of the state and central governments is remarkable.

Establishing protected areas is, however, only the first step: managing them in the face of mounting pressures is becoming an increasingly formidable task, demanding the reconciliation of wildlife interests with human needs and aspirations. Aware of many of the deficiencies in the existing network, the Government of India is to be congratulated for sponsoring a survey of its protected areas, the results of which are reported in 'Management of National Parks and Sanctuaries in India'. The survey, using a questionnaire approach, was carried out by the Environmental Studies Division, Indian Institute of Public Administration, under the direction of Shekhar Singh. Based on a sample of 249 protected areas, this study must rank as among the first of its kind, and the dedication and disciplined approach of the research team is evident in its meticulous and exhaustive treatment of the data. The report is divided into five sections, with chapters on legal

status, natural resources, human activities, management and recommendations, supported by numerous tables of statistics which fill over half the volume.

Perhaps the most startling finding is that only 40% of national parks and 8% of sanctuaries sampled are legally designated; the rest have been initially notified and await completion of legal procedures. The boundaries of the great majority of protected areas, therefore, are not final — some may change during the settlement process. With some 56% of national parks and 72% of sanctuaries inhabited (at densities exceeding the national average of 2.5 persons per hectare in 10 sanctuaries), it is perhaps not surprising that legal procedures take on average three years and in some cases up to eight years to complete. Grazing, habitation, religious and agricultural rights or leases are among the most common issues requiring settlement.

Quite apart from the impact of fires, flooding, drought and water pollution, all of which are quantified in the report, protected areas are subjected to ever-increasing pressures from exploitation, both legal and illegal. Grazing of livestock, for example, is permitted in 39% of national parks and 73% of sanctuaries, but the incidence of illicit grazing is much higher in both cases. Similarly, timber continues to be legitimately extracted from 16% of national parks and 43% of sanctuaries. It would appear from the results of the survey that, in general, management is not equipped to deal with the scale of the problems that threaten many of India's protected areas. Only an estimated 50% of national parks and 31% of sanctuaries have management plans. Most of these are never approved by respective chief wildlife wardens, which means that budgets are seldom met in full or on time. Such shortcomings have previously been recognised. In 1985, for example, the Indian Board of Wildlife recommended that 15% of state forest department budgets should be car-

marked for wildlife management at a time when expenditure on protected areas accounted for just over 2% of forest department budgets.

These are among the salient facts emerging from this study. Undoubtedly, it has its shortcomings and the authors readily acknowledge the fact that responses to the questionnaires have not been independently verified. This is a long process but is being addressed, with each protected area being visited as part of an ongoing project to produce a series of state protected area directories. In the meantime, the present report is warranted, enabling remedial action to be taken by policy and decision makers without unnecessary delay.

Overall presentation of the data is clear and concise, although statistics summarising some of the geographical and biological features of protected areas in Chapter 2 could have been presented in a more meaningful context. Data showing the frequency distribution of forest types within protected areas, for example, could have been accompanied by statistics summarising the national coverage of the different forest types, in order to identify gaps in the network. In the annexed section on international conventions, it is unfortunate that no mention is made of the World Heritage Convention, in which India is an active participant, with five natural properties designated under the Convention to date.

Such criticisms do not detract from the value of this report. Not only does the study provide a wealth of useful information on India's protected areas for wildlife managers, scientists and politicians alike, but it also serves as a model which could be usefully adopted in other countries.

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